Claims

1. (Original) A hybrid TDMA spread spectrum communication system, the system comprising:

a HUB for generating a HUB TDMA epoch, wherein the HUB TDMA epoch comprises at least one Priority Message slot comprising at least one Priority message sub-slot; and

at least one SPOKE, wherein the at least one SPOKE is adapted to transmit a Priority Message during the at least one Priority message sub-slot within the HUB TDMA epoch, wherein a symbol length of the Priority Message is adapted to coincide with a PN epoch.

2. (Original) A system as in claim 1 wherein the HUB further comprises:

at least one HUB PN code generator for generating HUB PN codes; and

at least one HUB rake receiver coupled to the at least one PN code generator, wherein the at least one HUB rake receiver is adapted to PN decode a PN encoded signal.

3. (Original) A system as in claim 2 where in the at least one HUB rake receiver comprises at least two parallel PN correlators.

4. (Original) A system as in claim 3 wherein the HUB further comprises:

at least one HUB Doppler/Phase compensator coupled to the at least one HUB PN code generator, wherein the at least

one HUB Doppler/Phase compensator is adapted to minimize PN phase difference between the HUB and the at least one Spoke.

5. (Original) A system as in claim 4 wherein the at least one HUB Doppler/Phase compensator comprises at least one HUB Time Error Feedback (TEF) circuit.

6. (Original) A system as in claim 1 wherein the at least one SPOKE comprises:

at least one SPOKE PN code generator for generating SPOKE PN codes, wherein the SPOKE PN code generator is adapted to generate PN epochs; and

at least one SPOKE Doppler/Phase compensator coupled to the at least one SPOKE PN code generator, wherein the at least one SPOKE Doppler/Phase compensator is RF coupled to the HUB Doppler/Phase compensator, and is adapted to minimize HUB/SPOKE PN phase difference.

7. (Original) A system as in claim 6 wherein the at least one Spoke Doppler/Phase compensator comprises at least one SPOKE Time Error Feedback (TEF) circuit.

8. (Original) A system as in claim 6 wherein the at least one SPOKE is adapted to generate a data rate clock in accordance with the PN epochs generated by the at least one SPOKE PN code generator.

9. (Original) A HUB PN Epoch TDMA waveform, the HUB PN Epoch TDMA waveform comprising:

a TDMA frame, wherein the TDMA frame corresponds to a PN epoch, wherein the TDMA frame comprises:

a plurality of TDMA access slots, wherein at least one of the plurality of TDMA access slots is designated as a Priority Message slot, wherein the Priority Message slot comprises a plurality of Priority Message sub-slots.

10. (Original) A HUB PN Epoch TDMA waveform as in claim 9 wherein each of the plurality of Priority Message sub-slots comprise:

a signal acquisition period;

a priority message period following the signal acquisition period;

a flush bits period following the priority message period; and

a guard time period following the flush bits period.

11. (Original) A HUB PN Epoch TDMA waveform as in claim 10 wherein the PN epoch corresponds to one second duration between PN epochs.

12. (Original) A method for priority communication management in a hybrid Time Division Multiple Access - Spread Spectrum (TDMA-SS) system, the method comprising:

providing a HUB, wherein providing the HUB further comprises providing a TDMA frame, wherein the TDMA frame corresponds to a PN epoch;

designating a Priority Message (PM) time slot within the TDMA frame, wherein designating the PM time slot further comprises:

sub dividing the PM time slot into a plurality of PM sub-divisions; and

assigning each of the plurality of PM sub-divisions to a Spoke.

13. (Original) A method as in claim 12 further comprising:

receiving a SPOKE PN encoded Priority Message during one of the plurality of PM sub divisions; and

parallel PN correlating the received PN encoded Priority Message.

14. (Original) A method as in claim 13 wherein parallel PN correlating the received PN encoded PM further comprises minimizing PN phase difference between the received PN encoded Priority Message and a PN code generated by the HUB.

15. (Original) A method as in claim 14 wherein minimizing PN phase difference further comprises:

compensating for HUB/SPOKE Doppler effects; and

compensating for HUB/SPOKE component variability.

16. (Original) A method of managing transmitting Priority Message data from a plurality of SPOKEs to a HUB, the method comprising:

determining a Time Division Multiple Access (TDMA) frame;

determining a Priority Message (PM) slot within the TDMA frame;

assigning at least one portion of the PM slot to each of the plurality of SPOKEs;

transmitting PM data from each of the plurality of SPOKES during its respectively assigned portion of the PM slot.

17. (Original) A method as in claim 16 wherein the TDMA frame comprises a PN epoch period.

18. (Original) A method as in claim 16 further comprising minimizing PN phase difference between each of the plurality of SPOKES and the HUB.

19. (Original) A method as in claim 18 wherein minimizing PN phase difference further comprises:

receiving SPOKE data during a Station Keeping time slot, wherein receiving SPOKE data during the Station Keeping time slot further comprises:

compensating for HUB/SPOKE Doppler effects; and

compensating for HUB/SPOKE component variability.

20. (Original) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for managing transmitting Priority Message data from a plurality of SPOKEs to a HUB, the method comprising:

determining a Time Division Multiple Access (TDMA) frame;

determining a Priority Message (PM) slot within the TDMA frame;

assigning at least one portion of the PM slot to each of the plurality of SPOKEs;

transmitting PM data from each of the plurality of SPOKES during its respectively assigned portion of the PM slot.